

Customer No.: 31561  
Application No: 10/064,095  
Docket NO.: 9068-US-PA

### **REMARKS**

#### **Present Status of the Application**

This is a full and timely response to the outstanding non-final Office Action mailed on May 3, 2005. The Office Action has rejected claims 1-7, 16 under 35 U.S.C. 103(a) as being unpatentable over He et al. (USP 6,649,950), Chen et al. (USP 6,392,263) and Rhode (USP 6,740,915), all considered together.

Claims 1-7 and 16 remain pending of which claim 1 has been amended to more accurately describe the present invention. It is believed that no new matter is added by way of these amendments made to the claims or otherwise to the application.

After carefully considering the remarks set forth in this Office Action and the cited references, Applicants respectfully submitted that the presently pending claims are already in condition for allowance. Reconsideration and withdrawal of the Examiner's rejection are requested.

#### **Interview Summary**

The undersigned would like to thank Examiner Munson for granting a telephonic interview on July 26, 2005, during which the 103(a) rejection in the Office Action dated May 3, 2005 was discussed. More particularly, the undersigned and the examiner discussed the rejections and the teachings of the Chen, He and Rhodes references. The Examiner asserted that circuitry of the instant case had already been disclosed in Fig. 1C of Chen. Similarly, the

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implementation of the circuitry of the CMOS device had also been taught by the prior art references. Regarding the limitation of the local interconnect in claim 1, the Examiner asserted that it had been taught by Rhode. Although Rhode was directed to a photodiode rather than a photosensing region, the Examiner indicated that Rhode was being relied upon for a 103 rejection not a 102 rejection. Further, Rhode taught "the local interconnect extending to....the isolation structure to cover a periphery of the isolation structure and electrically connect to the source region of the reset transistor...." as shown in Figs. 1, 11, 14, 17. No agreement was reached during this interview.

#### **Discussion of Office Action Rejections**

*The Office Action rejected claims 1-7 and 16 under 35 U.S.C. § 103(a) as being unpatentable over He et al. (USP 6,649,950, He hereinafter), Chen et al. (USP 6,392,263, Chen hereinafter) and Rhode (USP 6,740,915), all considered together.*

Applicants respectfully submit that He, Chen and Rhode, all considered together are legally deficient for the purpose of rendering claim 1 unpatentable because the reference or references, taken alone or combined, at least fails to teach or suggest each and every element recited in the claims.

Claim 1 of the present invention teaches, among other things, "...a photodiode sensing region formed under the isolation structure in the substrate; ...; a local interconnect, wherein a first end of the local interconnect is located on the substrate between the photodiode sensing

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*region and the reset transistor, extending to an upper portion of the isolation structure to cover a periphery of the isolation structure over the photosensing region and electrically connect to the source region of the reset transistor...".* With the local interconnect covering the periphery of the isolation structure of the photodiode, the periphery of the isolation structure (for example, the bird's beak area) can be protected from being damaged in the subsequent process to reduce the dark-current effect and increase the image sensor performance and the exposure time. The cited references neither teach nor suggest such features as in the instant case. First of all, the alleged photosensing region 342 of Rhodes is not configured under the isolation structure 332.

Accordingly, the photosensing region 342 of Rhodes is not being protected by the isolation structure 332. Although the doped polysilicon layer 320 of Rhodes, which is being considered as equivalent to the local interconnect of the instant case, partially covers the isolation structure 332, the periphery of the isolation structure 332 that is covered by the doped polysilicon layer 320 is not configured over the photosensing region 342. In other words, the periphery of the isolation structure that is covered by the local interconnect is not covering the photosensing region 342 as in the instant case. Similarly, Chen and He also fail to teach or suggest at least the above-mentioned features of the claimed invention.

For at least these reasons the references, taken alone or combined, fail to teach or suggest each and every element recited in the claims, and the motivation to combine Chen, He and Rhode is also lacking, Applicant respectfully submits that all rejections have been rendered moot and/or accommodated and that the now pending claim 1 is in condition for allowance. Since claims 2-7

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are dependent claims which further define the invention recited in claim 1, respectively.  
Applicants respectfully assert that these claims also are in condition for allowance. Thus,  
reconsideration and withdrawal of this rejection are respectively requested.

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### CONCLUSION

For at least the foregoing reasons, it is believed that the presently pending claims 1-7 and 16 are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Date :

*August 5, 2005*

Respectfully submitted,

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